

**FACT SHEET FOR STATE WASTE DISCHARGE  
PERMIT NO. ST-9109**

**TOWN OF MANSFIELD  
WASTEWATER TREATMENT PLANT**

**SUMMARY**

The Town of Mansfield is seeking renewal of its State Waste Discharge Permit for its Publicly-Owned Treatment Works (POTW). The POTW is comprised of the wastewater collection system, a two-cell lagoon and a sprayfield.

The previous permit, issued in March 1999, required the Town to develop several reports to comprehensively assess the entire collection and treatment system and potential impacts to ground water. The Permittee submitted a required Groundwater Quality Evaluation Report in 2003. The Report concluded that the lagoon liner was leaking and the Town of Mansfield needed to upgrade its wastewater treatment facility.

Ground water monitoring conducted down gradient of the lagoon site has demonstrated marked increases in all parameters measured. TDS and chloride have increased above Washington State Ground Water Quality Criteria. Comparable increases were observed for total phosphorous and total nitrogen. There are other concerns facing the Town as well, chief among them is a Department of Health requirement for setbacks or buffers around the sprayfield and lagoon sites.

The Department understands, given the small size of the Town, current loan payment structure and the current availability of funding sources, the Town will need some time and considerable effort to secure funding for necessary treatment system upgrades. To this end the Department is requiring the Permittee follow a Schedule of Compliance, which requires submittal of annual reports on progress made and activities undertaken to secure funding for facility upgrades based on an Abridged Engineering Report.

This permit requires the Town to submit, for approval, an Abridged Engineering Report to evaluate future capacity needs and proposed upgrades. In conjunction with the Abridged Engineering Report, the town of Mansfield is required to develop and submit to the Department a Sampling and Analysis Plan. This is to assure proper operation of the sprayfield and lagoon system for the protection of human health and quality of the ground water.

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## **INTRODUCTION**

This fact sheet is a companion document to State Waste Discharge Permit No. ST-9109. The Department of Ecology (the Department) is proposing to issue this permit, which will allow discharge of treated wastewater to waters of the State of Washington (State). This fact sheet explains the nature of the proposed discharge, the Department's decisions on limiting the pollutants in the wastewater, and the regulatory and technical bases for those decisions.

Washington State law (Revised Code of Washington (RCW) 90.48.080 and 90.48.162) requires that a permit be issued before discharge of wastewater to waters of the state is allowed. Regulations adopted by the State include procedures for issuing permits (Chapter 173-216 Washington Administrative Code (WAC)), technical criteria for discharges from municipal wastewater treatment facilities (Chapter 173-221 WAC) and water quality criteria for ground waters (Chapter 173-200 WAC). They also establish the basis for effluent limitations and other requirements which are to be included in the permit.

This fact sheet and draft permit are available for review by interested persons as described in Appendix A--Public Involvement Information.

This fact sheet and draft permit have been reviewed by the Spokane Office of the Washington State Department of Health and by the Permittee. Errors and omissions identified in these reviews have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. This fact sheet will not be revised. Changes to the permit will be addressed in Appendix C--Response to Comments.

GENERAL INFORMATION	
Applicant	Town of Mansfield
Facility Name and Address	Town of Mansfield Branscom Road Mansfield, WA 98830
Type of Treatment System:	Two-cell aerated lagoon and sprayfield
Discharge Location	Latitude: 47° 49' 15" N Longitude: 119° 37' 55" W
Legal Description of Application Area	Section 24, Township 27 N, Range 25 E. W. M.
Contact at Facility	Name: Tyler Caillie Telephone #: 509-683-1112
Responsible Official	Name: Tom Snell Title: Mayor Address: PO Box 218 Mansfield, WA 98830 Telephone #: 509-683-1112

## BACKGROUND INFORMATION

### DESCRIPTION OF THE COLLECTION AND TREATMENT SYSTEM

The Mansfield Treatment Plant is categorized as a class I treatment facility due to its component parts and complexity of operation. The treatment plant operator must be, at the minimum, a class I operator certified by the state.

The facility receives domestic wastewater from residences and a few commercial businesses. Currently, there are no industrial dischargers to the facility.

In preparation for the extensive collection system improvements undertaken in 1995, the Town submitted a *Sewer Collection and Treatment System Engineering Report* (ER) to the Department for review. In addition to addressing the collection and lagoon systems, the ER evaluated the treatment capacity of the "empirically" designed sprayfield, which had not previously been assessed. The sprayfield was "as built" without benefit of engineering, hence the "empirical" moniker used in the ER. The ER was approved shortly after and is the source of much of the information contained in this fact sheet. The 3.67 acre sprayfield has not been in use since May, 1999. It is unknown at this time if the Town plans to operate the sprayfield during the proposed permit term.

In October 2003 the Permittee submitted a *Ground Water Quality Evaluation Report*. The finding of the 2003 report is that the lagoon system is impacting the quality of the ground water. The Department agrees with this finding. Lining of the lagoon will occur as soon as funding is available. The Permittee will be required, under Special Condition 8.B, to submit annual updates on activities leading to funding of the lagoon liner.

The sizing and location of the sprayfield and additional monitoring wells will be based on an approved Abridged Engineering Report Addendum to the 1995 Engineering Report that will include a Sprayfield Adequacy Assessment. The Sprayfield Adequacy Assessment will be done in accordance with the Departments' Publication #93-36, *Guidelines for Preparation of Engineering Reports for Industrial Wastewater Land Applications* and the 1994 Washington State Department of Health, *Design Criteria for Municipal Wastewater Land Treatment Systems for Public Health Protection*. The Permittee will be required, Special Condition 8.B, to submit annual updates on activities leading to funding for the sprayfield expansion, setbacks and any additional monitoring wells.

## **History**

The sewer collection system was originally constructed in 1951 and consisted of form cast bell and spigot concrete pipe. The only major extension of the sewer collection system since initial construction was the extension of service to the new school site in 1979. The original collection system was replaced with seamless HDPE pipe under construction improvements in 1995. Following failure of the Mansfield drainfield, a dual-cell aerated lagoon system was built in 1974. The two lagoon cells each have an area of approximately 2 acres at their normal operating depth of four feet. The lagoon system was originally designed as a non-overflow (zero-discharge) system. However, following an overflow event, a sprayfield was installed adjacent to and up gradient of the lagoons in 1977.

The sprayfield is located up gradient, to the north and adjacent to the lagoons. It has not been in use since May of 1999. Although wastewater volumes have not changed, the fact that the sprayfield has not been needed is a strong indicator that the integrity of the lagoon liner has been compromised. Although limitations for sprayfield discharge are included in the permit, it is not likely the sprayfield will be used in this permit period due to Department of Health requirements and the condition of the sprayfield equipment.

## **Collection System Status**

The total length of the Town's sewer system is approximately 18,140 feet, including 2,650 feet of outfall pipe connecting the Town to the lagoon site. Approximately 12,759 feet of the 15,490 feet of the collection system located within the Town was replaced during the 1995 rehabilitation project. The main sewer consists of a 10-inch sewer interceptor (trunk sewer) running along Second Avenue to Mansfield Boulevard. The remainder of the collection system consists

primarily of 8-inch branch sewers and laterals. The entire system is gravity fed; there are no lift stations. Since replacement with seamless HDPE pipe in 1995 I & I has not been a problem.

## **TREATMENT PROCESSES**

### **Lagoon Treatment System**

The treatment system is a dual-cell, aerated, 4 acre facultative lagoon, defined as a secondary treatment plant in Section 15.20 of the Department's *Criteria for Sewage Works Design*. Influent flow is metered, but does not receive any pretreatment or screening. The lagoon cells are operated in parallel, with a single 7-1/2 horsepower floating high-speed mechanical surface aerator in each cell.

The total depth of the lagoon cells is 9-1/2 feet to the top of the dike. At a typical operating depth of three to four feet these cells contain approximately four to five million gallons of wastewater. The lagoon cells have the capacity to retain more than 5 million gallons of wastewater above the mean operating level and still maintain 2 feet of freeboard on the dikes. At a design flow of 40,000 gallons per day, the hydraulic retention time in the lagoon cells is potentially between 100 and 125 days.

### **BOD Removal**

The 1995 ER analyzed the treatment efficiency of the lagoon system for biochemical oxygen demand (BOD). Using the design formula in Section 15.22 contained in the *Criteria for Sewage Works Design*, an 85% reduction of BOD is achieved with a hydraulic retention time of 32 days at a temperature of 0° C. The 1995 ER assumed a worst case scenario of 5% lagoon volume loss for sludge storage and 10% volume loss for ice cover. Under that assumption the minimum retention time to achieve an 85% BOD reduction at the same temperature is calculated to be 37 days. Therefore, the ER concluded, the lagoon system provides more than twice the retention time required to achieve secondary level treatment for a design population of 400 persons. Given that sludge has never been removed from the lagoons, there is some question regarding the worst case scenario presented in the 1995 ER. Current waste loadings and future capacity are to be addressed in the Abridged Engineering Report.

### **Nitrogen Balance**

As discussed in the 2003 *Ground Water Quality Evaluation Report* typical medium-strength domestic wastewater has a total nitrogen content of about 40 mg/L. Nitrogen removal in storage reservoirs can be substantial and depends on several factors including retention time, temperature, pH and pond depth. EPA's *Process Design Manual, Land Treatment of Municipal Wastewater* provides a model to estimate nitrogen removal in the lagoon systems. The model is based on the following formula.

$$N_t = N_o e^{-0.0075t}$$

Where  $N_t$  = nitrogen concentration in pond effluent (total N), in mg/L

$N_o$  = nitrogen concentration entering pond (total N), in mg/L

$t$  = retention time, in days

The model predicts, using present conditions, a total nitrogen concentration of approximately 11 mg/L at an average retention time of 177 days. The last two years average flow, July 2001 to July 2003 is 26,000 gpd. Using the 1995 ER retention time calculation that was based on an average annual flow of 28,200 gpd and allowing for reduced nitrogen removal due to ice cover, plus assuming a 20% safety factor, the lagoon system predicts a total nitrogen level of less than 13 mg/L throughout the year. Mansfield's groundwater monitoring well produced total nitrogen levels between 10.5 to 12.7 mg/l during the period of May, 1999 to January, 2003. The model has proven to be good predictor of the nitrogen concentration expected in the groundwater.

### Water Balance

Influent is metered with a Parshall flume flow meter that was installed in 1995, but due to a calibration error discovered sometime later did not begin yielding accurate data until 1998.

The evaluation of wastewater balance is based on the following parameters contained in the table below.

Average annual flow	28,200 gpd
Average annual precipitation	11 inches
Average annual evaporation	42 inches
Water surface at average depth	4.0 acres

An evaluation of the wastewater balance is presented in the following table.

Total sewage entering the lagoon per year (28,200 X 365)	10,293,000 gallons
Total annual precipitation entering lagoon (4 X 43,560ft X 11"/12mo X 7.5gal)	1,198,000 gallons
Total annual evaporation from lagoon (4 X 43,560ft X 42"/12mo X 7.5gal)	4,574,000 gallons
Land treatment of total annual lagoon effluent (Sum of input minus evaporation)	6,917,000 gallons equivalent to 21.2 acre feet



A seepage rate of 0.28 inch/day was estimated in 1974. The seepage rate was expected to decrease since the porosity of the soil would decrease as TSS filled the interstitial spaces in the soil column. The seepage rate was estimated to be one-tenth the design rate. As predicted, subsequent chemical and microbial reactions did result in a further decrease in the seepage rate as accumulating solids sealed the remaining pores of the lagoon bottom. The net result of the overestimation of the seepage rate was that the water balance anticipated in the design did not exist and the lagoon cells overflowed within two years of construction. A non-engineered sprayfield application of lagoon effluent to dispose of the wastewater was installed by the Town's utility superintendent in 1977.

The 16 lb/ft<sup>2</sup> bentonite liner has evidently been breached. This has resulted in the sprayfield not being used since May of 1999, although the influent flow rates have remained stable. The seepage rate is currently estimated at 0.7 inch/day. It is assumed that the lagoons will be effectively sealed once funding becomes available and an upgrade is completed. The current permit will require the Town to prepare an Abridged Engineering Report detailing repair and/or upgrade to the treatment system. The permit will also require the Town to provide the Department with an annual progress report on securing funds for treatment facility upgrade and/or repair.

## **GROUND WATER**

A perched aquifer lies approximately 15 feet below ground surface in the area of the treatment facility. This perched aquifer is reported to be tapped sometimes to provide stock watering water. At this time the permit writer is not aware of any active stock watering wells in the area.

The lagoons and sprayfield are separated from the deeper potable aquifer by a confining layer consisting of at least 150 feet of post-Vantage Yakima Basalt. Well logs of nearby wells and the geologic profile of the area indicate that the basalt in the vicinity of Mansfield is not uniform throughout the several hundred feet of rock which overlies the regional aquifer. Thus, it is reasonable to assume that the hydraulic conductivity of the basalt layer varies throughout the profile of the basalt. The following data are presented in the ER (p. 64) about the facility's potential to impact ground water:

### **ESTIMATED TRAVEL TIME TO REGIONAL AQUIFER FROM LAND TREATMENT SYSTEM**

Thickness of basalt layer	210 feet
Hydraulic gradient	1.0 ft/ft
Hydraulic conductivity	$2.89 \times 10^{-9}$ m/sec
Porosity	3.46%
Travel rate	8.38 ft/year
Travel time to aquifer	25 years

The ER goes on to explain that time of travel to the deep aquifer at the sprayfield site is also increased by the presence of glacial till over the basalt and below the soil horizon. It would be expected that some lateral movement would occur above the till, which would increase travel time as well as the water quality of the drainage water below the sprayfield, and result in further dilution of sprayfield underflow with regional ground water prior to infiltration through the glacial till to the underlying basalt. The 1995 ER concludes: Considering the secondary level of treatment through the lagoon system and the tertiary level of treatment which occurs in the land application system prior to interception of the underflow by the glacial till, there is a high level of certainty that potential impacts on the deep aquifer are nonexistent (p. 64).

### **Ground Water Quality Evaluation**

The previous permit required installation of a ground water monitoring well near the treatment lagoon to collect ground water data that would indirectly evaluate the integrity of the lagoon liner. One ground water monitoring well, GW, was installed down gradient and adjacent to the northeast corner of the north lagoon cell in 1995. The depth of GW at the time the well was drilled was 20 feet. Anaerobic conditions and/or reduced iron compounds were not observed anywhere in the soil column, including the saturated zone. Other ground water quality data have been obtained from the existing Mansfield Drinking Water Well #3, City, which is 305 ft deep. It is located approximately 1150 ft due south of lagoon well GW. Sampling originates at depth of approximately 150 ft. The Dezellen domestic well, (DEZ), has also been sampled. Sampling occurs at an estimated depth of 50 ft. The depth of the well is unknown. DEZ is located approximately 550 ft southwest up gradient of well GW. Due to depth discontinuity among the wells, no direct correlation can be made among the test results.

The following ground water test results were submitted to the Department in the summer of 1995:

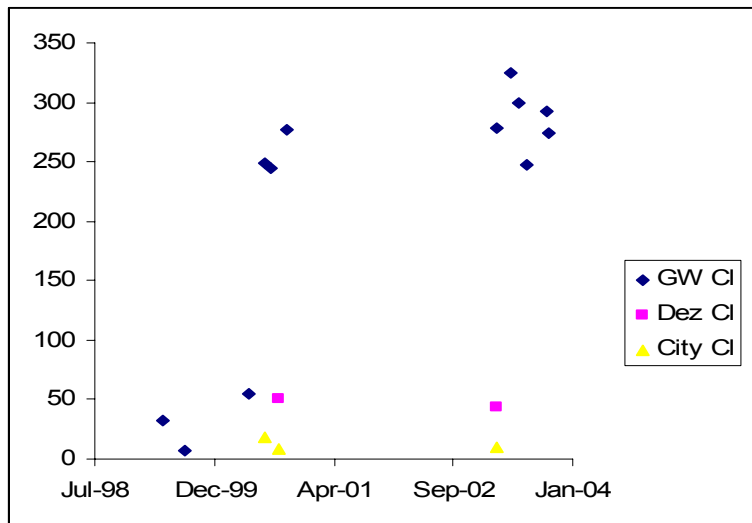
Parameter	Concentration, in mg/L
Total phosphorus	0.17
Dissolved oxygen	4.5
Nitrate/nitrite	0.11
Biochemical oxygen demand BOD)	<5.0

The 1995 ER concluded that based on the extremely low concentrations of nutrients and the absence of oxidizable organic compounds normally associated with treated effluent, the lagoon is hydraulically isolated from the underlying perched aquifer (p. 62). The Permittee has not continued to analyze for the above parameters with the exception of nitrate during the ensuing years. Recent nitrate analysis from the GW well submitted with the application for permit is below the level of detection at 0.07 mg/L whereas, total nitrogen has increased markedly in recent years.

The following figures depict the monitoring results of the groundwater monitoring well directly down gradient from the lagoon, GW, the City of Mansfield drinking water well #3, City, and the DEZ well. The GW data indicates there is a problem with the lagoon liner.

Figure 1 depicts chloride levels obtained from the 3 wells.

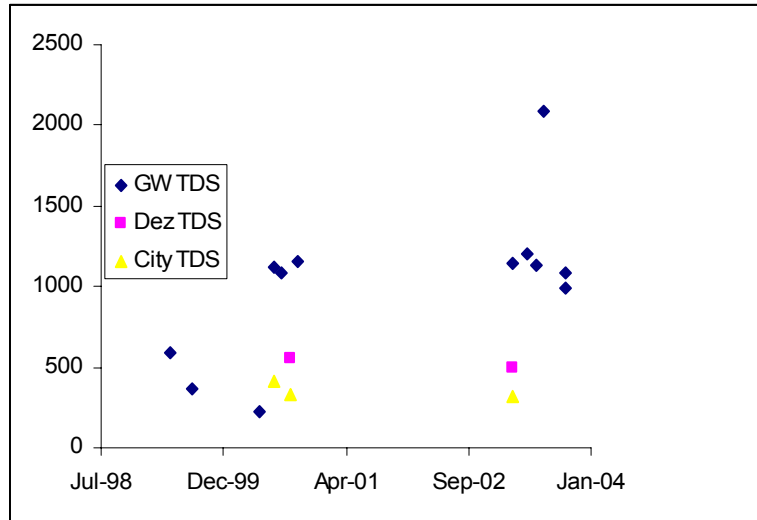
**Figure 1. Chloride Levels Found in the Three Source Wells**  
Groundwater Standard 250 mg/L (y axis mg/L)



Chloride level found at the GW site show a dramatic increase in chloride occurring at about the same time the sprayfield was phased out. Since that time chloride concentrations at this well have been at or in most cases above the ground water Quality Standard of 250 mg/L.

Figure 2 depicts Total Dissolved Solids, (TDS), levels found at the three source wells.

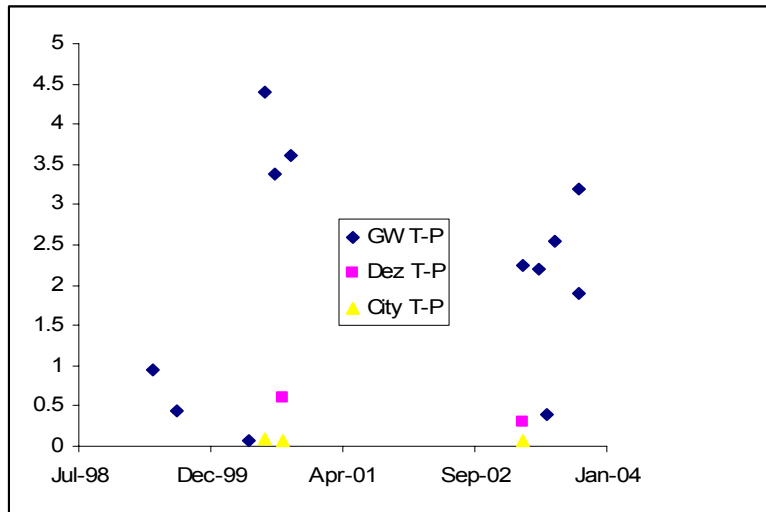
**Figure 2. TDS Found in the Three Source Wells**  
Groundwater Standard 500 mg/L (y axis mg/L)



All three source wells have historically exhibited high concentrations of TDS at or near the Ground Water Quality Standard of 500 mg/L. This is not uncommon for areas of intensive agricultural use. However, the GW well TDS concentration has increased to two times the Ground Water Quality Criterion beginning in the year 2000.

Figure 3 depicts the levels of Total Phosphorous found in the three source wells.

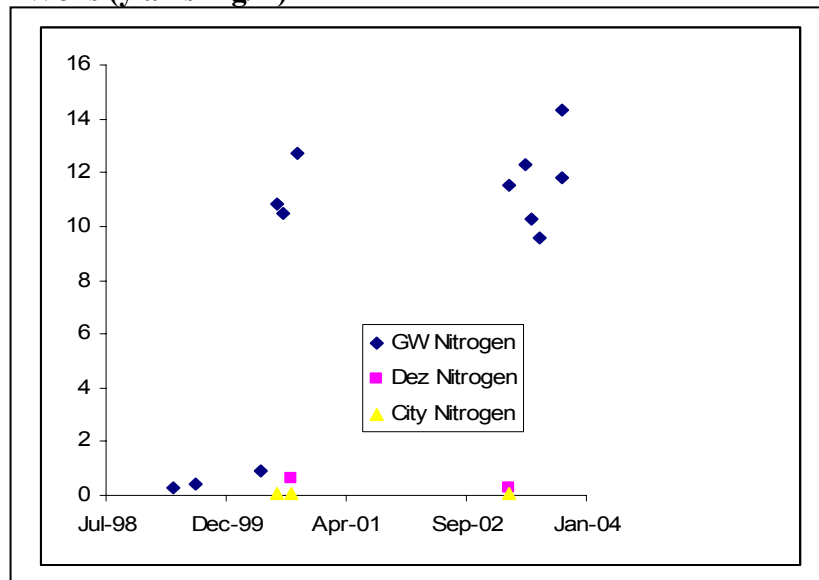
**Figure 3. Total Phosphorous Found in the Three Source Wells**  
(y axis mg/L)



GW phosphorous levels demonstrated a dramatic increase in concentration occurring in 2000. The same time frame as the other parameters analyzed. Phosphorus levels continue to be elevated.

Figure 4 depicts the levels of Total Kjeldahl Nitrogen, (TKN), found in the three source wells.

**Figure 4. Total Kjeldahl Nitrogen Found in the Three Source Wells (y axis mg/L)**



The TKN levels demonstrate a dramatic increase in concentration occurring in the same time frame as the other parameters analyzed.

### Sprayfield

The sprayfield was originally developed in response to an unacceptable overflow discharge from the lagoon system. The design of the sprayfield was empirical. The primary factor controlling the size of the 3.67 acre sprayfield is the property boundary on the west and south sides of the 15-acre wastewater treatment site.

The DMR record indicates that the last time the sprayfield was used was in May of 1999. The current state of repair of the sprayfield system is unknown. It is also unknown at this time if the Town expects to reactivate the sprayfield in the future.

The 1995 ER stated that the sprayfield did not meet the requirements of setback distances for land treatment systems. In particular, the property line forms the boundary of the sprayfield on three sides, whereas a minimum setback from the property line is 200 feet if disinfection is provided, or 600 feet without disinfection. Fecal coliform monitoring occurred only twice during the previous permit because sprayfield use was ended. The minimum value was 700 colonies per 100 ml. The maximum was 3000 colonies per 100 ml. The Permittee will be required to address

disinfection, setback requirements and land acquisition in the Abridged Engineering Report required during this permit period.

### **Sprayfield Loading**

According to the 1995 ER, biological oxygen demand (BOD) and suspended solids (SS) are not controlling or critical limiting factors for the sprayfield, due to the presumed extended hydraulic detention time in the lagoons and the associated level of treatment achieved (p. 51).

Furthermore, the ER states that the phosphorus sorption capacity of the soil profile exceeds the potential phosphorus loading from municipal secondary effluent (p. 52).

The sprayfield is separated from a deep potable aquifer by a confining layer consisting of at least 150 feet of post-Vantage Basalt. Loading calculations in the 1995 ER provide for protection of the deep aquifer as well as the shallow perched water table at a depth of approximately 15 feet below ground surface.

Concerning nitrate loading of the sprayfield, the 1995 ER contained a calculation that showed approximately 180 inches of lagoon effluent must be applied over the course of the irrigation season to have a percolate concentration of 10 mg/L nitrate (as N) at a depth of approximately five feet. This amounted to about 8.16 inches per week over the 22-week irrigation season. The actual maximum hydraulic loading rate was 2.7 inches per week in 12-hour sets. Thus, the ER concluded, the maximum loading rate as then practiced was approximately one-third of the allowable maximum rate based on ground water criteria for nitrogen, and nitrogen loading was not considered a limiting design parameter for the Town's sprayfield (p.55).

### **Site Soils**

A description of soils present at the treatment plant site is contained in Chapter 3 of the Operation and Maintenance Manual (O & M Manual). The site is described as very deep, well drained soils on a broad basalt plateau. These soils formed as glacial till mixed with loess and volcanic ash in the upper part. The Natural Resources Conservation Service (NRCS), cited as the source of soils data in the O & M Manual, classifies the soil underlying the lagoon and sprayfield as "250 series Touhey Complex" (NRCS, formerly the Soil Conservation Service, Soil Survey of Douglas County, November 1981).

The typical profile for the 250 series Touhey Complex soil consists of approximately 2 feet of fine, sandy loam with a gravelly, sandy loam to a depth of approximately 40 inches. From about 40 to 60 inches, a dense till or hardpan has been observed.

During October 1995 three test pits were dug at the sprayfield site. Visual observations and laboratory testing showed that a hardpan, or glacial till substratum, was not present at the site. The three test pits revealed that the soil in the sprayfield consists of a fine, sandy loam down to a depth of 4 to 6 feet. Silty sand with some gravel was observed to a depth of 10 feet. One

***EXPIRATION DATE: APRIL 30, 2009***

hydrometer analysis was conducted to verify the above results, and the results showed that the clay content in the sample was less than 2%. The onsite investigation provided confirmation to the Town that the soils in the sprayfield are highly suited for the purposes of land application of treated lagoon effluent (O & M, pp. 3-25 and 26).

### **Residual Solids**

Influent entering the treatment lagoons is not screened or otherwise pretreated. Rags or other debris found during equipment cleaning or maintenance are land filled. Furthermore, the lagoon bottoms have never been cleaned of sludge.

### **PERMIT STATUS**

The previous permit for this facility was issued on March 22, 1999 with an expiration date of June 30, 2004.

An application for permit renewal was submitted to the Department on September 4, 2003 and accepted on September 5, 2003.

### **SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT**

The Permittee reported only three months of effluent data for the previous permit period. This was because the sprayfield use was discontinued 3 months into the permit period. Fecal Coliform colony counts for two of the months were well above the limit of 200 colonies per 100 ml with a minimum colony count of 700.

A compliance inspection without sampling was conducted on March 20, 2003. In the following inspection report it was noted that the City has failed to comply with Consent Order # DE-01WQCR-3221. This order granted the City an additional year to complete the Water Quality Evaluation Report contained in condition S8.A2 of the permit. The report also noted an updated O&M manual that includes an approved ground water quality monitoring plan based on the Water Quality Evaluation Report due for approval by July 15, 2003. The Report was received at the Department on October 15, 2003

The Town has since met the aforementioned requirements of the Order.

### **WASTEWATER CHARACTERIZATION**

#### **Influent**

Influent data presented in the table below is summarized from DMRs submitted to the Department from July 2001 to July 2003.



Parameter	Units	Average <sup>a</sup>	Minimum <sup>b</sup>	Maximum <sup>c</sup>
BOD <sub>5</sub>	mg/L	100.6	25	340
pH	Standard Units	NA	6.6	9.2

a-Average of monthly averages reported for this parameter.

b-Minimum single sample result for this parameter.

c-Maximum single sample result for this parameter.

BOD influent concentrations often vary as much as an order of magnitude within a month. These differences are more common to the spring months. For instance, individual sampling results reported for December 2001, April 2002 and June 2003 were:

Date	Concentration, in mg/L
12/11/01	330.0
12/26/01	18.0
4/9/02	180.0
4/23/02	60.0
6/10/03	317.6
6/25/03	60.0

## Effluent

Flow rates are determined by multiplying the number of hours the irrigation pump operates by the flow rate through the pump. Effluent is sampled from the pipe between the lagoons and the sprayfield. Data presented in the table below were summarized from DMRs submitted to the Department for the reporting period from October 1997 to September 1998, except for January and February 1998, when the ponds were frozen. Sampling occurred whenever conditions allowed immersion of the siphon pipe into the ponds. During the 1999-2004 permit period only three months of data were available in 1999. Use of the sprayfield was discontinued beginning in May of 1999.

Parameter	Units	Average <sup>a</sup>		Minimum <sup>b</sup>		Maximum <sup>c</sup>	
		1997-1998	1999	1997-1998	1999	1997-1998	1999
BOD <sub>5</sub>	mg/L	21.2	12.2	<5.0	5.3	143.0	21.8
TSS	mg/L	66.1	31	16.0	30	143.0	32
Fecal coliform	#colonies/100 mL	NC <sup>d</sup>	1850	23	700	TNTC	3000
pH	Standard Units	NC <sup>e</sup>	NC <sup>e</sup>	6.5	4.7	9.4	8.7

TNTC-Too numerous to count

- a-Average of monthly averages reported for this parameter.
- b-Minimum single sample result for this parameter.
- c-Maximum single sample result for this parameter.
- d-Not calculated because of unquantified results.
- e-Not calculated because measurement of pH is done on a logarithmic scale.

TSS effluent concentration averaged 31 mg/L during the three months of testing in 1999.

### PROPOSED PERMIT LIMITATIONS

State regulations require that limitations set forth in a waste discharge permit must be either technology- or water quality-based. Wastewater must be treated using "all known, available, and reasonable methods of prevention, control and treatment" (AKART) and not pollute the waters of the State. The minimum requirements to demonstrate compliance with the AKART standard are derived from the *Water Reclamation and Reuse Interim Standards*, the *Design Criteria for Municipal Wastewater Land Treatment*, and Chapter 173-221 WAC.

This permit includes limitations on the quantity and quality of the wastewater applied to the sprayfield that have been determined to protect the quality of the ground water. Technology-based effluent limits are based on the generally accepted performance standards for waste stabilization ponds, fecal coliform limits based on state Department of Health guidelines for municipal wastewater applied to land, and specific design criteria contained in the approved engineering report. Water quality-based limitations are based upon compliance with the Ground Water Quality Standards (Chapter 173-200 WAC).

The more stringent of the water quality-based or technology-based limits are applied to each of the parameters of concern. Each of these types of limits is described in more detail below.

The permit contains interim and final limits. Interim limits will be in place until an approved Sampling and Analysis Plan has been approved and the approved Plan has been included in appendix A of an updated Operation and Maintenance. Upon receipt of the updated O & M Manual the limits contained in Appendix A will become the Final Limits for the remainder of the permit term.

### TECHNOLOGY-BASED EFFLUENT LIMITATIONS

All waste discharge permits issued by the Department must specify conditions requiring AKART of discharges to waters of the State (WAC 173-216-110). The table below contains BOD<sub>5</sub> and pH permit limits based on the treatment capacity of the sprayfield. The fecal coliform limitation is a State Department of Health criterion applicable to land treated wastewater effluent.

Compliance with these limitations are necessary to satisfy the requirement for AKART. In addition, limits for TSS and Total Nitrogen have been imposed to assure compliance with the criteria allowing submission of an Abridged Engineering Report according to the Department's *Guidelines for Preparation of Engineering Reports for Industrial Wastewater Land Application Systems*.

The approved ER states that, due to the extended hydraulic retention time in the lagoons and the associated level of treatment achieved, BOD and TSS are not controlling or critical factors for the sprayfield (p. 51). In the best professional judgment of the Central Regional Office Water Quality Engineer, treated wastewater applied to the sprayfield with parameter concentrations in the table below will not degrade ground water quality

**Waste Stabilization Pond Effluent Limitations**

Parameter	Monthly Average, in mg/L	Daily Maximum, in mg/L
BOD <sub>5</sub>	100	150
Fecal coliform	200 colonies/100 ml	
pH	Between 6.0 and 10.0 Standard Units	

The above limitations must be met if the Town discharges to the existing sprayfield. The point of compliance will be the sampling port at the sprayfield irrigation pump station.

**STATE DEPARTMENT OF HEALTH DESIGN CRITERIA FOR MUNICIPAL LAND TREATMENT SYSTEMS**

The Permittee's discharge to the adjacent sprayfield is subject to standards contained in the State Department of Health's *Design Criteria for Municipal Wastewater Land Treatment Systems for Public Health Protection, February 1994*. That document contains a requirement that disinfected wastewater applied to land treatment systems contain "no more than 200 fecal coliform per 100 millimeters in any one sample (based on a minimum of weekly sampling) as determined at the entry point to the irrigation system." Therefore, although WAC 173-221-040(2) allows a weekly geometric mean of 400 colonies/100 millimeters, the more stringent Department of Health limit is the permit effluent limit for this parameter.

**GROUND WATER QUALITY-BASED EFFLUENT LIMITATIONS**

In order to protect existing water quality and preserve the designated beneficial uses of Washington's ground waters including the protection of human health, WAC 173-200-100 states that waste discharge permits shall be conditioned in such a manner as to authorize only activities that will not cause violations of the Ground Water Quality Standards and be protective of

**EXPIRATION DATE: APRIL 30, 2009**

beneficial uses. Drinking water is the beneficial use generally requiring the highest quality of ground water. Providing protection to the level of drinking water standards will protect a great variety of existing and future beneficial uses.

Applicable ground water criteria as defined in Chapter 173-200 WAC and in RCW 90.48.520 for this discharge include the following:

### Ground Water Quality Criteria

Total Coliform Bacteria	1 Colony/ 100 mL
Total Dissolved Solids	500 mg/L
Chloride	250 mg/L
Sulfate	250 mg/L
Nitrate	10 mg/L
pH	6.5 to 8.5 standard units
Manganese	0.05 mg/L
Total Iron	0.3 mg/L
Toxics	No toxics in toxic amounts

Should it be determined that groundwater quality is compromised by the operation of the sprayfield, effluent limitations will be imposed in the following permit cycle. The point of compliance for any limits will be determined in the Ground Water Monitoring Plan.

### COMPARISON OF INTERIM LIMITATIONS WITH THE PREVIOUS PERMIT

Lagoon System Effluent Parameter	Existing Limits		Proposed Interim Limits	
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum
BOD <sub>5</sub> , in mg/L	100	150	100	150
TSS, in mg/L	----	----	100	150
Total Nitrogen, in mg/L	----	----	35	----
Fecal coliform, #colonies/100mL	200		200	
pH, in Standard Units	Between 6.0 and 10.0		Between 6.0 and 10.0	

To assure adherence to the criteria allowing submission of an Abridged Engineering Report according to the Department's *Guidelines for Preparation of Engineering Reports for Industrial Wastewater and Application Systems*, the above limits for TSS, BOD<sub>5</sub> and Total Nitrogen have been added to the interim effluent limitations.

The *Guidelines for Preparation of Engineering Reports for Industrial Wastewater and Application Systems*, require that in order for a facility to submit an Abridged Engineering report

the wastewater; (a) does not contain toxics and ( b) meets at least three of the following for criteria:

- Flow is 15,000 gallons per day or less and applied according to crop agronomic needs;
- Total nitrogen is 35 mg/L or less; and
- Total BOD<sub>5</sub> is 200 mg/L or less; and
- TSS is 200 mg/L or less.

### **MONITORING REQUIREMENTS**

Monitoring, recording, and reporting are specified to verify that the treatment process is functioning correctly, that ground water criteria are not violated, and that effluent limitations are being achieved (WAC 173-216-110).

### **INFLUENT AND EFFLUENT MONITORING**

The monitoring and testing schedule is detailed in this permit under Special Condition S2.A. Specified monitoring frequencies take into account the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring.

The permit contains interim and final monitoring requirements. Interim requirements will be in place until an approved Sampling and Analysis Plan has been approved and the approved Plan has been included in appendix A of an updated Operation and Maintenance. Upon receipt of the updated O & M Manual the requirements contained in Appendix A will become the Final Monitoring Requirements for the remainder of the permit term.

### **GROUND WATER MONITORING**

The monitoring of ground water at the lagoon is required in accordance with the Ground Water Quality Standards, Chapter 173-200 WAC. The Department has determined that land application of wastewater from the lagoon has a potential to pollute the ground water; therefore, the Permittee is required to evaluate the impacts on ground water quality at the sprayfield.

Ground water monitoring is the method of verification required in WAC 173-200-080(2). However, in the event ground water monitoring is determined to be infeasible, because of the site characteristics or other factors, alternative monitoring may be allowed at the Department's discretion. Therefore, Special Condition 9 requires submittal of a Sampling and Analysis Plan, to verify that the aquifer is not being impacted by excessive loading of the sprayfield. Upon Departmental approval, the Permittee will be required to include the Plan in Appendix A of the Operations and Maintenance Manual.

Until such time as the monitoring well network is installed and the approved updated O & M Manual final monitoring requirements commence, the Permittee is required to sample ground water from the existing well at the lagoon site under Special Condition S2.A.

## **CROP MONITORING AND SOIL MONITORING**

Special Condition S9. requires a Sampling and Analysis Plan, be submitted to the Department for approval. Upon Departmental approval, the Plan will be included in Appendix A of the O & M Manual to verify the proper operation of the sprayfield treatment system. Among the elements to be addressed in the Plan are soil and crop monitoring alternatives to ground water monitoring in the event ground water monitoring is determined infeasible. The alternative plan must provide sufficient data to demonstrate that the aquifer is not being impacted by materials applied to the sprayfield. After approval of the alternative soil and crop monitoring plan, the plan will be incorporated into the Town's O & M Manual in Appendix A.

## **OTHER PERMIT CONDITIONS**

### **ABRIDGED ENGINEERING REPORT**

The Department has determined the Permittee's effluent meets the criteria for an Abridged Engineering Report as per *Publication #93-36, Guidelines for Engineering Reports for Industrial Wastewater Land Applications Systems*. The effluent does not contain toxics and the effluent meets 3 of the four other criteria. Although the flow is above 15,000 gpd, the monthly average concentration of Total Nitrogen is below 35 mg/L and the monthly average concentrations of BOD and TSS are consistently below 200 mg/L.

The permit requires the Permittee to submit to the Department an Abridged Engineering Report Addendum to the 1995 Engineering Report under Special Condition S.8. The 2003 Ground Water Quality Evaluation submitted by the Permittee, which was required in the last permit, discussed a number of issues and proposed actions associated with the Town's treatment works. The Addendum should address these issues and proposed actions raised in the Ground Water Quality Evaluation.

The solutions and directions of these problems and actions are closely linked. For instance, if lining the lagoon necessitates reactivation of the sprayfield, purchases of additional land would need to occur. This, of course, is dependant on additional land being available. The Town may find that the only available land is some distance from the present site or that securing future capacity with a different treatment technology on the existing Town-owned land is more cost effective. The Town needs to investigate all possible alternatives to determine the most cost effective solution that is driven by as yet unknown funding sources and level of funding available.

It is assumed that the town will upgrade its lagoon and sprayfield system and therefore the Abridged Engineering Report Addendum expectations are geared to address that scenario. Should the Town decide on a different technology, the Town will inform the Department of that decision and upon which the Abridged Engineering Report expectations will be modified as needed.

The Abridged Engineering Report Addendum to the 1995 Engineering Report will be prepared according to the Departments' *Publication #93-36, Guidelines for Engineering Reports for Industrial Wastewater Land Applications Systems*, will at a minimum address:

- Any additional storage capacity needed to meet future growth and anticipated future wastewater flows
- The location and sizing of the sprayfield system necessary to meet future needs.
- Plan and schedule to comply with any State Department of Health setback requirements.
- Ground water quality impacts in the lagoon and sprayfield areas.
- A plan for relining the lagoons.

## **SAMPLING AND ANALYSIS PLAN**

Special Condition S.9 requires the Permittee to update the Operations and Maintenance Manual, Appendix A, with a Sampling and Analysis Plan, which identifies ground water quality impacts in the lagoon and sprayfield areas. The plan must be sufficient to assure compliance with the ground water standards. In the event ground water monitoring is determined to be infeasible, the Permittee shall develop an alternative monitoring plan sufficient to verify that the aquifer is not being impacted by wastewater from the lagoon or sprayfield. The plan should include soil or crop monitoring.

## **PROGRESS REPORT**

With high anticipated costs of the project, previous loans used to pay for sewer and water upgrades and with the low Town population, the Town of Mansfield will need to aggressively investigate opportunities for acquiring funds to pay for the project. It is expected that this process will take some time. For tracking purposes, the Permittee will be required to submit annual updates on the progress made toward funding the lagoon relining, additional sprayfield land and improvements necessary to meet capacity sizing as well as state and local Health Department setback requirements.

## **REPORTING AND RECORDKEEPING**

The requirements of Special Condition S3. are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 273-216-110).

## **FACILITY LOADING**

Design criteria for the lagoon system portion of the facility, detailed in Special Condition S4.A2 of the permit, were based on criteria contained in the original ER. Design criteria for the sprayfield were developed after the sprayfield had been in use for approximately 17 years; criteria were developed by assessing site characteristics, crops grown, precipitation and evaporation and other factors.

This permit requires the Town to develop an Abridged Engineering Report that shall reevaluate in detail the design criteria in light of new design restraints.

This permit requires the Town to maintain adequate capacity to treat the flows and waste loading to the treatment facility (WAC 173-216-110[4]). The Town is required to submit an PMAC when the plant reaches 85% of its flow or loading capacity. This permit requires the Town to submit an Abridged Engineering Report including a comparison of the actual flow and waste loadings to the design criteria for the plant.

## **OPERATIONS AND MAINTENANCE**

This permit contains Special Condition S5. as authorized under RCW 90.48.110, WAC 173-220-150, Chapter 173-230 WAC, and WAC 173-240-080. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment.

## **RESIDUAL SOLIDS HANDLING**

To prevent water quality problems the Town is required by Special Condition S6. to manage all residual solids (grit, screenings, scum, sludge and solid waste) in accordance with the requirements of: (1) RCW 90.48.080 and Water Quality Standards; (2) applicable sections of 40 CFR Part 503 and Chapter 173-308 WAC, "Biosolids Management"; (3) applicable sections of Chapter 173-350 WAC, "Solid Waste Handling Standards."

The final use and disposal of biosolids shall be done in accordance with Chapter 173-308 WAC ("Biosolids Management"), 40 CFR Part 503, and under coverage of the State general permit for biosolids management, as applicable.

The disposal of solid waste is regulated by the local jurisdictional health department in accordance with State solid waste regulations.



## **PRETREATMENT**

WAC 173-216-110 requires that the list of prohibitions in WAC 173-216-060 be included in the permit.

Federal pretreatment requirements in 40 CFR 403 and Sections 307(b) and 308 of the Clean Water Act apply to this facility. Therefore notification to the Department is required when pretreatment prohibitions are violated and when new sources of commercial or industrial wastewater discharge are added to its system.

## **SPILL PLAN**

The Department has determined that the Permittee does not store chemicals that have the potential to cause water pollution if accidentally released. Therefore, a Spill Plan is not required at this time. However, if information becomes available that chemicals are stored which, if spilled, have the potential to impact the treatment plant or ground water, the Department may require submittal of a Spill Plan with an administrative order or permit modification.

## **GENERAL CONDITIONS**

General Conditions are based directly on State laws and regulations and have been standardized for all waste discharge to ground water permits issued by the Department.

Condition G1. requires responsible officials or their designated representatives to sign submittals to the Department. Condition G2. requires the Permittee to allow the Department to access the treatment system, production facility, and records related to the permit. Condition G3. specifies conditions for modifying, suspending or terminating the permit. Condition G4. requires the Permittee to apply to the Department prior to increasing or varying the discharge from the levels stated in the permit application. Condition G5. requires the Permittee to submit written notice of significant increases in the amount or nature of discharges (typically new industrial discharges) into the sewer system tributary to the permitted facility. Condition G6. requires the Permittee to construct, modify, and operate the permitted facility in accordance with approved engineering documents. Condition G7. prohibits the Permittee from using the permit as a basis for violating any laws, statutes or regulations. Condition G8. requires application for permit renewal 60 days prior to the expiration of the permit. Condition G9. requires the payment of permit fees. Condition G10. describes the penalties for violating permit conditions.

### **RECOMMENDATION FOR PERMIT ISSUANCE**

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to control toxics, and to protect human health and the beneficial uses of waters of the State. The Department proposes that the permit be issued for five (5) years.

### **REFERENCES FOR TEXT AND APPENDICES**

Faulkner, S.P., Patrick Jr., W.H., Gambrell, R.P., May-June, 1989. Field Techniques for Measuring Wetland Soil Parameters, Soil Science Society of America Journal, Vol. 53, No.3. Washington State Department of Ecology, 1993.

United States Department of Environmental Protection, October 1984. Process Design Manual: Land Treatment of Municipal Wastewater; Supplement on Rapid Infiltration and Overland Flow, Publication # 625181013A, Chapter 3.

Washington State Department of Ecology, 1978 revised December 1998. Criteria for Sewage Works Design (Orange Book), January, Ecology Publication # 98-37, pg. 9.

Washington State Department of Ecology, 1996. Implementation Guidance for the Ground Water Quality Standards, Ecology Publication # 96-02.

Washington State Department of Health, February 1994, Design Criteria for Municipal Wastewater Land Treatment Systems for Public Health Protection.

Washington State University, November, 1981. Laboratory Procedures - Soil Testing Laboratory. 38 pp.

**APPENDIX A--PUBLIC INVOLVEMENT INFORMATION**

The Department has tentatively determined to reissue a permit to the applicant listed on page one of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

Public notice of application was published on July 16, 2003 in the Wenatchee World to inform the public that an application had been submitted and to invite comment on the reissuance of this permit.

The Department published a Public Notice of Draft (PNOD) on January 29, 2004 in the Douglas County Empire Press to inform the public that a draft permit and fact sheet are available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Water Quality Permit Coordinator  
Department of Ecology  
Central Regional Office  
15 West Yakima Avenue, Suite 200  
Yakima, WA 98902

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the thirty (30) day comment period to the address above. The request for a hearing shall indicate the interest of the party and reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-216-100). Public notice regarding any hearing will be circulated at least thirty (30) days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing.

The Department will consider all comments received within thirty (30) days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone, 509/457-7105 , or by writing to the address listed above.

This permit was written by Richard Marcley.

## APPENDIX B--GLOSSARY

**AKART**--An acronym for "all known, available, and reasonable methods of prevention, control, and treatment" and includes best management practices as may be stipulated by the Department.

**Ambient Water Quality**--The existing environmental condition of the water in a receiving water body.

**Ammonia**--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

**Average Monthly Discharge Limitation**--The highest allowable average of daily discharge values over a calendar month, calculated as the sum of all daily discharge values measured during a calendar month divided by the number of daily discharge values measured during that same calendar month.

**Best Management Practices (BMPs)**--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

**BOD<sub>5</sub>**--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD<sub>5</sub> is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

**Bypass**--The intentional diversion of waste streams from any portion of the collection or treatment facility.

**Chlorine**--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

**Compliance Inspection - Without Sampling**--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

**Compliance Inspection - With Sampling**--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the 85 percent removal requirement. Additional sampling may be conducted.

**Composite Sample**--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots.

**Construction Activity**--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

**Distribution Uniformity**--The uniformity of infiltration (or application in the case of sprinkle or trickle irrigation) throughout the field expressed as a percent relating to the average depth infiltrated in the lowest one-quarter of the area to the average depth of water infiltrated.

**Engineering Report**--A document, signed by a professional licensed engineer, which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

**Fecal Coliform Bacteria**--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

**Grab Sample**--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

**Industrial Wastewater**--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

**Maximum Daily Discharge Limitation**--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar

day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

**Method Detection Level (MDL)**--The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

**pH**--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

**Quantitation Level (QL)**-- A calculated value five times the MDL (method detection level).

**Soil Scientist**--An individual who is registered as a Certified or Registered Professional Soil Scientist or as a Certified Professional Soil Specialist by the American Registry of Certified Professionals in Agronomy, Crops, and Soils or by the National Society of Consulting Scientists or who has the credentials for membership. Minimum requirements for eligibility are: possession of a baccalaureate, masters, or doctorate degree from a U.S. or Canadian institution with a minimum of 30 semester hours or 45 quarter hours professional core courses in agronomy, crops or soils, and have 5, 3, or 1 years, respectively, of professional experience working in the area of agronomy, crops, or soils.

**State Waters**--Lakes, rivers, ponds, streams, inland waters, wetlands, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

**Stormwater**--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

**Technology-based Effluent Limit**--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

**Total Coliform Bacteria**--A microbiological test which detects and enumerates the total coliform group of bacteria in water samples.

**Total Dissolved Solids**--That portion of total solids in water or wastewater that passes through a specific filter.

**Total Suspended Solids (TSS)**--Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out

light and can promote and maintain the development of noxious conditions through oxygen depletion.

**Water Quality-based Effluent Limit**--A limit on the concentration and/or mass of an effluent parameter that is intended to prevent pollution of the receiving water.

**APPENDIX C--RESPONSE TO COMMENTS**

No comments were received by the Department of Ecology.